



Transmission Business Line (TBL)

Business Practice

OPERATING RESERVES - SPINNING AND SUPPLEMENTAL SERVICES, REVISION 1

For the OATT effective October 1, 2001

Posted May 15, 2003

This Revision 1 does not contain changes being considered in ongoing discussions in the current TBL Business Practice Technical Forums between BPAT and its Transmission Customers.

Rev. Date	Revised by	Summary
05/14/03	Dave Gilman Mary Ann Dalton	<i>This revision is to add clarification to (1) section C.9 regarding the interpretation of the performance standards applicable to self-suppliers of Operating Reserves (2) Section C.14.c. regarding self-supplying outside the one control area concept, (3) Section B.4 regarding settlement under the Northwest Power Pool Reserve Sharing Procedures. Changes were also made in Section C.5. increasing the minimum criteria on deliveries from resources in the BPAT Control Area from 100 annual aMW to 150 annual aMW. Minor changes were also made such as incorporating redundant paragraphs into one paragraph.</i>

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A. Introduction

Transmission Customers may purchase Operating Reserves - Spinning and Supplemental, to cover their Operating Reserve requirements from BPAT pursuant to its Open Access Transmission Tariff (Tariff). The applicable rates to be applied for this service can be found in BPAT's Transmission and Ancillary Services Rate Schedules, at ACS-02 Rate Schedule, or its successor. This Operating Reserves - Spinning and Supplemental Services business practice applies to either Ancillary Services or Control Area Services as described in BPA's 2002 Transmission and Ancillary Services Rate Schedules, or its successor, whereby the Transmission Customers serving load within or outside the BPAT Control Area from generation resources located within BPAT's metered Control Area are required to obtain such service.

1. BPAT is obligated by the Western Electric Coordinating Council's (WECC) Minimum Operating Reliability Criteria (MORC) to carry reserves for contingencies within its Control Area boundaries. These reserves provide for replacement of capacity and energy needed to serve Control Area Load Responsibility in the event of a forced outage. This allows transmission schedules to continue for the Schedule Hour. The Control Area reserve requirement is dependent upon the Load Responsibility served by the Control Area.
2. For BPAT purposes, Load Responsibility includes all loads within the BPAT Control Area plus all interchange exports from the BPAT Control Area minus all interchange imports into the BPAT Control Area. All interruptible imports, exports or loads must be designated by contractual agreement with BPAT before it can be excluded from Load Responsibility.
3. Generators operating in the BPAT Control Area that provide power through an interconnected system without a BPAT transmission agreement must obtain the Control Area Services of Operating Reserves - Spinning and Supplemental Services and supply BPAT with a generation estimate schedule during the pre-schedule time window. Real-time changes should be made during the real-time scheduling window.
4. Transmission Customers must make arrangements for the provision of Operating Reserves to support their transmission transactions. (See Appendix A for example.) Generators pay for Control Area Services of Operating Reserves - Spinning and Supplemental Services, when the reserve services are not otherwise provided.
5. Unless otherwise defined herein, capitalized terms are defined in BPAT's Open Access Transmission Tariff (Tariff) or in WECC policies, standards or criteria at WECC's website, <http://www.WECC.biz>. See section I. of this business practice for additional definitions.
6. If the Transmission Customer chooses to self-supply or third party supply Operating Reserve Services, the resource(s) supplying such services must respond to automated signals sent from BPAT's control center calling upon those

resources, and an observable response must occur, according to the technical requirements described in this business practice.

- a. Self-supply means the Transmission Customer, who is the Transmission Contract Holder, provides its total Operating Reserve requirement from resources it controls.
 - b. Third party provider means the Transmission Customer's total Operating Reserve requirement is being met via contract with a resource operator that has agreed to meet the Customer's Operating Reserve requirement to BPAT. A third party provider may provide service to more than one Transmission Customer. Such provider must provide the aggregate total requirement of all its customers for every hour of the year.
7. Plant operators with generation operating in the BPAT Control Area must notify BPAT of any contingency that results in partial or total reduction of the generator's scheduled energy delivery for the hour, within four minutes of the occurrence of the contingency event to coincide with the Northwest Power Pool (NWPP) Reserve Sharing Procedures (RSP). The plant operator shall provide the following minimum information to the BPAT generation dispatcher:
- ♦ The name of the plant
 - ♦ What resource(s) was lost, unit number or name
 - ♦ The time of the contingency
 - ♦ The reason for the contingency
 - ♦ The amount of reserves required (in MW) reflecting the actual amount of generation lost. See Appendix B to determine the amount of generation lost.
 - ♦ How long the reserves are required (up to the remainder of the Scheduling Hour)
 - ♦ Other information as may be requested by the BPAT generation dispatcher
- Prior approval for alternative methods of notification, other than by plant operators, may be granted by the BPAT generation dispatcher only after a site visit. If an alternative is approved, BPAT may revoke method of notification if the BPAT generation dispatcher is unable to perform its reliability duties.
8. The consequence of not reporting a contingency by the required time is that contingency energy will not be delivered. Instead, Generation Imbalance charges will apply. If a generator is not subject to Generation Imbalance charges (see BPAT's Generation Imbalance business practice), then Energy Imbalance charges (see BPAT's Energy Imbalance business practice) may apply.

B. Operating Reserve - Spinning and Supplemental Services

1. A Transmission Customer's Operating Reserve requirements for Spinning and Supplemental Services must be met by one of the following three alternatives: 1) purchase from BPAT; 2) self-supply; or 3) third party supply. The entire reserve requirement for both Operating Reserve - Spinning and Supplemental Services

must be supplied by one of the supply options. Selection of an Operating Reserve provider is described below.

- a. At the time a Transmission Customer makes its initial request for transmission service with BPAT, it must indicate its provider for Operating Reserves - Spinning and Supplemental Services. BPAT is the default provider under the following circumstances: a) no election was made by the Transmission Customer; b) the designated provider fails to perform in proportion to its obligation, or c) the supply arrangements the Transmission Customer has made are not comparable to purchasing Operating Reserve Services from the BPAT.
 - b. The Transmission Customer may make annual elections to obtain Operating Reserve Services from either BPAT or a third party, or to self supply. Such election must be made over the OASIS or in writing by each July 1 for the ensuing Fiscal Year (FY) (October through September). The election shall be effective at the beginning of the following FY provided the Transmission Customer and BPAT are able to implement the required equipment and system changes in a timely manner to accommodate the request. Unless provisions for a Dynamic Schedule of the resource by BPAT already exist, it may take a year or more to put the required infrastructure in place. BPAT assumes that any customer who did not submit an election by July 1 intends to continue its existing arrangement for Operating Reserves provider through the next FY.
 - c. The Transmission Customer is responsible for costs of the arrangements to put the required communications and control equipment and systems in place. The customer's project plan requires approval by BPAT to assure that North America Electric Reliability Council (NERC) and the WECC reliability requirements can be met when the plan is implemented.
 - d. BPAT will notify the Transmission Customer no later than September 1 of the FY in which the customer's election is made whether the proposed supply arrangements are comparable to purchasing Operating Reserve Services from BPAT, and whether the customer's selection can be implemented, with an estimate of when the self/third party supply could be implemented.
2. A resource used for self-supply or third party supply of Operating Reserves Spinning and Supplemental Services may be in another control area provided that the deployment signal is automated and that a distinct measurable response can be observed by BPAT.
 3. The settlement for Operating Reserve Services for energy delivered on behalf of resources inside the BPAT Control Area is described below. (See Appendix A for example.)
 - a. In addition to Operating Reserve requirements, the Transmission Customers are responsible for the costs associated with the energy

delivered from Operating Reserves, consistent with the ACS-02 Rate Schedule.

- b. BPAT will determine the amount of energy delivered when Operating Reserve Services is called upon by:
 - (1) Using the MWh meter readings from the resource declaring the contingency as given to BPAT at the end of the hour, or by direct telemetry, and subtracting that amount from the scheduled amount of energy delivery (Generator Estimate used for Generation Imbalance Service) for the hour, or
 - (2) If the generation has a variable schedule, BPAT will determine the MWh contingency energy by continuously integrating the telemetered actual generation minus the variable schedule. This is called Station Control Error (SCE), or
 - (3) If the MWh meter reading is not available, BPAT will calculate the energy delivered using the generation capacity lost each hour multiplied by the number of minutes remaining in the hour divided by 60.
 - (4) If the resource declaring the contingency takes station service from the BPAT system during the Scheduling Hour, this energy will be added to the energy delivered.
- c. The Operating Reserves energy delivery is the difference between the generation estimate for the hour and the energy produced by the resource that had the contingency. If the amount of energy supply produced is equal to or greater than the generation estimate for the hour, no settlement of Operating Reserves energy is required. Except if the energy supplied by self-supplier resources in response to BPAT's request is greater than the amount needed for the contingency, the resource declaring the contingency will be charged for this energy.
- d. Settlement covers reserve energy delivery for the remainder of the current hour; and including the next hour if the event occurs after 30 minutes into the current hour.
- e. BPAT will determine how much energy each operating reserve energy provider delivered, and the settlement obligation of each Transmission Customer taking delivery from the generator experiencing the contingency event. See section B.3.c for over recovery by resource.
- f. The settlement will be a bill to the Transmission Customer receiving reserve energy and a credit to each provider of reserve energy. Monetary settlement for the energy delivered will be based on the energy index price. One or more indices will be posted on the OASIS specifying the season or month each index will be used.
- g. The Energy Return Option is suspended for the following reasons:

- (1) Applying the Operating Reserve requirements to small schedules will result in numerous return obligations of less than 1 MW. Current practice does not allow the return of quantities of less than 1 MW.
 - (2) The methodology for determining the return obligation and notifying Transmission Customers of return hours and amounts is not available.
4. The Operating Reserves settlement for energy delivered when NWPP RSP are called upon is described below.
 - a. BPAT follows the NWPP RSP for energy settlement of exchanges outside of BPAT's Control Area. This can be found at the following web address: <http://www.nwpp.org.html>. Once at the NWPP web site, select "Procedures" then select "Contingency Reserve Sharing Procedures".
 - b. The most recent NWPP RSP settles all transactions for reserve deliveries financially. BPAT will use the market index described in the NWPP Procedures.

C. Criteria for Self-Supplying Operating Reserves - Spinning and Supplemental Services

1. The amount of capacity that the customer must provide to self-supply Operating Reserves is the Spinning Reserve requirement and Supplemental Reserve requirement as defined in the ACS-02 Rate Schedule. This is the sum of the Ancillary Services and Control Area Services requirements as described in section A.3. above.
2. Self-supply requires both BPAT's Dittmer Control Center (DCC) and Munro Control Center (MCC) to be able to communicate with the Transmission Customer's Energy Management System (EMS) for deployment of reserves.
3. The Customer's EMS must be staffed 24 hours a day-7 days a week to assure dispatch contact is available continuously.
4. Installation costs incurred by BPAT for telemetry and monitoring will be the responsibility of the Transmission Customer. Costs will include labor, software for Automated Generation Controls (AGC), communication, as well as upgrade of both the customer and BPAT facilities. Ongoing maintenance costs of the customer's equipment will be the responsibility of the Transmission Customer.
5. In order to self-supply Operating Reserves the Transmission Customer must have deliveries from resources in the BPAT Control Area that equal or exceeds 150 annual aMW so that BPAT is able to measure and verify the self-supply response. This requirement also helps assure that reserve deployment, which is based on the proportion of Control Area requirements, results in whole megawatt dispatch orders being sent to suppliers when reserve energy is called upon. It is common for reserve energy requirements to be a fraction of the total reserve requirement.

For instance, a 10% reserve energy requirement is deployed when a contingency of 10% of the total reserve requirement occurs.

6. The resource operator must follow the applicable WECC or NERC (or successor organizations) policies except where the WECC policies are in conflict with local regulatory or Regional Transmission Organization requirements. The applicable WECC or NERC (or successor organizations) policies include but are not limited to the following:
 - a. NERC Planning Standards and Operating Policies
 - b. WECC Progress Report Policies and Procedures
 - c. WECC Reliability Criteria for Transmission System Planning
 - d. WECC Voltage Stability Criteria
 - e. WECC Minimum Operating Reliability Criteria
 - f. WECC Policy Statement on Power System Stabilizers
 - g. WECC Procedures for Regional Planning Project Review and Rating Transmission Facilities
 - h. WECC Testing Guidelines for Synchronous Unit Dynamic Testing and Model Validation. Test results must be filed with WECC.
7. BPAT may require the resource operator to provide copies of its filings with WECC.
8. The operator of the self-supply resource will be required to have an agreement with BPAT covering operating responsibilities.
9. Six failures (strikes) to meet performance standards during a FY will be grounds for suspension of the self-supply provisions for Operating Reserves until the customer can demonstrate corrective action has been taken to eliminate the reason for the suspension. The following shall be considered strikes:
 - a. Failure by the Transmission Customers to provide BPAT the minimum amount of capacity as determined by BPAT to meet its Operating Reserve requirements for any hour. Some examples include:
 - (1) If a Transmission Customer does not provide its minimum Self-Supply capacity requirement to BPAT for one hour in a given day, that customer will have one strike.
 - (2) If the Transmission Customer does not provide its minimum Self-Supply capacity requirement to BPAT for three different hours in a given day, that customer will have three strikes.
 - (3) If the Transmission Customer does not deliver and /or sustain the capacity requirement to BPAT when a contingency response is requested, that customer will have one strike.
 - b. Notification Regarding Strikes and Suspension of Self-Supply Rights

Failure to comply with the procedures described in this business practice, Operating Reserves - Spinning and Supplemental, will result in a strike against the Transmission Customer's performance. BPAT will notify the Transmission Customer of a strike for failure to comply, no later than 7 calendar days after the strike occurs through either the Inter Control Center Protocol (ICCP) data link in the form of an alarm, a phone call, or by letter. Six strikes will result in BPAT revoking the Transmission Customer's right to self-supply or provide third party Operating Reserves services to other Transmission Customers. The Transmission Customer will be notified in writing of the effective date of the termination of its right to self-supply or third-party supply Operating Reserves.

10. Self-supply of Operating Reserves is based on the one Control Area concept. The amount of self-supply resource capacity a Transmission Customer must provide is based upon the sum of the Transmission Customers' Operating Reserve requirements from transmission schedules plus their own generation in the BPAT Control Area. The self-supplier's Operating Reserve requirements divided by the BPAT Control Area's Operating Reserve requirements obligation under WECC and NERC is the self-suppliers Allocation Ratio. (Present BPAT Operating Reserve requirements are 7% of non-hydro generation output on-line plus 5% of hydro generation output on line (deliveries from BPAP resources require a 5.2% Operating Reserve requirements based upon an average of BPAP's resource mix.)) This Allocation Ratio is multiplied by the BPAT Control Area's energy deployment for the contingency event to establish the self-supplying Transmission Customer's reserve energy delivery for each hour.
11. Resources in the BPAT Control Area that are delivering firm power, but do not have all the necessary Operating Reserve requirement provided by BPAT's Ancillary Services will supply Operating Reserves as Control Area Services.
12. If the operator of the resource providing the self-supply of Operating Reserves is: 1) a member of the NWPP and 2) a participant in the RSG, then settlement procedures for reserve deliveries required under the RSG agreement will follow that agreement. If the self-supply resource operator is not a member of the RSG, then BPAT will administer the self-supply resource operator's contribution and its obligation to Reserve Sharing as billing credits or debits.
13. Self-supply for Operating Reserves outside of BPAT's one Control Area concept as described in Section C.10 above, requires the Transmission Customer to request an exemption from BPAT. To independently self-supply Operating Reserves for only the Transmission Customer's contingency events, the Transmission Customer must provide reserves for the full amount (100%) of its prospective resource loss and meet the requirements listed below. In all cases, no residual obligation shall be placed on the BPAT Control Area.
 - a. Submit a written request to the Transmission Account Executive expressing its desire to independently self-supply Operating Reserves, pursuant to Section B.1 above;

- b. Provide physical evidence, which may include metering, that demonstrates total independence from BPAT support; and;
 - c. Install equipment necessary for BPAT to determine if the estimated schedules for resources and deliveries to loads stayed within the net schedules submitted to BPAT.
 - d. BPAT will provide a written response to the customer no later than 60 days after receipt of a written request to independently self-supply Operating Reserves.
- 14. The following are examples of when the Transmission Customer may request an exemption be made to self-supply Operating Reserves outside the one Control Area concept:
 - a. A self-supplying Transmission Customer that trips load greater than or equal to the resource loss; or
 - b. The load and resource are part of an integrated process where load and generation directly track each other.
 - c. Interruptible Exports such that the receiving system provides Operating Reserves for 100% of the transmission schedule. Prior to implementation and to be consistent with C.13. above, fully automated systems and detailed design considerations must be approved by BPAT.

D. Self-Supplying Transmission Customers' Responsibilities for Communication of Information to BPAT Control Centers

- 1. Deployment of Transmission Customer's self-supply resources must be accomplished using automated response to electronic signals from BPAT. The resource(s) may be system rather than individual resources. System resources require independent response verification information.
- 2. The Transmission Customer shall exchange information with BPAT using the ICCP data link protocol between BPAT's two control centers, DCC and MCC, and the self-supplier's EMS (or resource).
- 3. The Operating Reserve requirements must be available at all times; fully delivered within 10-minutes after BPAT sends a request for Operating Reserves; and sustained for the remainder of the Scheduling Hour unless otherwise requested by BPAT.
- 4. Data requirements shall conform to WECC standards for inter-utility data exchange, including availability, bandwidth, security, and reliability. Data exchange and control signals must have a periodicity of 10 seconds or less. The Transmission Customer shall provide the following data to BPAT for its resources internal to the BPAT Control Area:
 - a. Instantaneous net hydro generation. This information determines the hydro portion for establishing deployment of Operating Reserves

- b. Instantaneous net thermal generation. This information determines the thermal portion for establishing deployment of Operating Reserves.
 - c. Basepoints of scheduled generation for each self-supply resource (or system) for the current hour and the next hour, plus the instantaneous Basepoint for the self-supply resource (or system).
 - d. The maximum, minimum, and spinning generating capability available within the NERC defined Disturbance Recovery Time Period refreshed (updated) every five minutes. Operating Reserves shall be held available at all times until a contingency occurs.
 - e. The Participation Factors of each resource that the Transmission Customer wishes to have deployed when reserves are called upon in order to distribute the response to multiple resources. The total of all Participation Factors equals 100% (BPAT must know where reserve supplies are coming from).
 - f. The operating status of each self-supply resource (a zero participation factor means resource is not available for operating reserves deployment).
 - g. The actual instantaneous generation, in MW, of each self supply resource that is providing reserves.
 - h. Status of the self-supplier's EMS. (An EMS that is out of service usually means the self-supply cannot be provided automatically.)
5. Data requirements for a Transmission Customer providing system responses for its self supply requirements. The self-supplier shall provide the following data to BPAT:
- a. Dynamic schedule of its response to the BPAT contingency reserve deployment;
 - b. Net interchange deviation;
 - c. System error signal, (for control areas, this is the Area Control Error (ACE)); and
 - d. The status of the self-supplier's EMS. (An EMS that is out of service usually means the self-supply cannot be provided automatically.)

E. BPAT Responsibilities for Communication of Information to the Transmission Customer Self-Supplying Operating Reserves

- 1. BPAT will determine the Transmission Customer's Operating Reserve requirements for the current hour and an estimate for the next hour. The customer's Allocation Ratio for Operating Reserves will change as transmission schedules are changed or generation amounts vary. The megawatt amount the self-supplier must deliver will be requested from BPAT over a data link to the self-supplier's resources.

2. BPAT will send a Plant Request or Setpoint up for the remainder of the Scheduling Hour or 65 minutes for a NWPP event to deliver Operating Reserve Service by the self-supplying Transmission Customer as follows:
 - a. Plant Request or Setpoint = Basepoint + (BPAT deployment requirement (or MW loss)) * (BPAT normalized participation factor)* (Operating Reserves Allocation Ratio); or
 - b. A Dynamic Schedule for self-provider's system resources. Dynamic Schedule = (BPAT deployment requirement (MW loss))*(Operating Reserves Allocation Ratio).
 - c. A verification status flag confirming that the new Setpoint represents a valid operating reserve delivery request.

The Setpoint is limited to the Basepoint plus the self-supplier's requirement.

3. During non-contingency conditions, BPAT will return to the supplier a Setpoint request signal with the BPAT deployment requirement equal to zero.
4. Supplier Recovery Error = Actual Generation, in MW, minus Setpoint, in MW, measured over the Disturbance Recovery Time Period. The Supplier Recovery Error must reach zero or positive MW prior to and continuing through the end of the Disturbance Recovery Period. The Supplier Recovery Error, in MW, will be recorded accurate to 1/10 MW. If the performance does not reach 100% Plant Compliance factor, then it will be counted as a failure to perform.

For $0 < t < 15$ min.

Plant Compliance Factor (i) = $[MW \text{ loss} - \max \{0, \text{or precontingency Supplier Control Error (i)} - \text{maximum Supplier Control Error (i)}\} / MW \text{ loss}] * 100\%$.

5. For circumstances where system resources are used, the ACE and Net Interchange Deviation will be used as the Supplier Control Error.
6. BPAT real time schedulers will notify each self-supplying Transmission Customer of the MWh of reserve energy it delivered for each hour of contingency. This notification will occur shortly after the conclusion of the hour of the contingency. BPAT will coordinate settlement of the self-supply party's reserve energy delivery and receipt with appropriate parties.

F. Criteria for Third-Party Provider of Operating Reserves - Spinning and Supplemental Services.

Transmission Customers that have a third party supply the customer's Operating Reserve-Spinning and Supplemental Services, are subject to Sections C and D, in addition to the following items:

1. Third-party Operating Reserves resource Allocation Ratio is the third party's total Operating Reserve requirements on behalf of the Transmission Customers' Operating Reserve requirements divided by the total BPAT Control Area requirement. Fifty percent (50%) of the third party Allocation Ratio must be

available as Spinning Reserve. BPAT shall notify the Transmission Customer and the third-party of all information and data required to make the appropriate calculations.

2. Demonstration that adequate Operating Reserve supply is being provided to cover the Transmission Customer's contingency exposure if a third-party independently provides reserves for the full amount of operating reserves outside of BPAT's one Control Area method as described in Section C.10 above.
3. The third party supplier must be approved by BPAT and have a contract with BPAT describing terms and conditions for supply and operational understandings between BPAT and the resource operator.

G. Information Required from Third-Party Providers to BPAT Control Centers

Transmission Customers that have a third party supply the customer's Operating Reserve - Spinning and Supplemental Services must provide the following items to BPAT:

1. The actual instantaneous generation, in MW, of each third-party resource (or system) that is providing reserves, if the resource is inside the BPAT Control Area.
2. The status of the third-party provider's EMS. (An EMS that is out of service usually means the third-party provider cannot automatically respond with reserve energy.)
3. The third-party provider's Area Control Error (ACE) and Net Interchange Deviation if the third party is not in the BPAT control area. This provides BPAT with independent verification that system resources may be responding to BPAT Operating Reserve requests.

H. BPAT Supplied Information to the Third-Party Provider of Operating Reserves

1. The third-party provider of Operating Reserve obligations must have reserves available at all times; deliver the reserves if required, within 10-minutes after BPAT sends a request for Operating Reserves; and sustain the reserve energy delivery for the remainder of the Scheduling Hour. The third party Operating Reserve requirements are equal to the BPAT Operating Reserve requirements times the third party Allocation Ratio.
2. BPAT will determine the Third Party Supplier's Operating Reserve requirements for the current hour and an estimate for the next hour. The Operating Reserve requirements will be the Parties' Allocation Ratio for Operating Reserves and will change as Transmission Schedules are changed or generation amounts vary.
3. BPAT will send a Plant Request or Setpoint up to the remainder of the Scheduling Hour or 65 minutes for a NWPP event to deliver Operating Reserve Service by the self-supplying Transmission Customer as follows:
 - a. $\text{Plant Request or Setpoint} = \text{Basepoint} + (\text{BPAT deployment requirement (or MW loss)}) * (\text{BPAT normalized participation factor}) * (\text{Operating Reserves Allocation Ratio})$.

- b. A dynamic schedule for self-provider's system resources. Dynamic Schedule = (BPAT deployment requirement (MW loss))*(Operating Reserves Allocation Ratio).
- c. A verification status flag confirming that the new Setpoint represents a valid operating reserve delivery request.

The Setpoint is limited to the Basepoint plus the requirement.

- 4. During non-contingency conditions, BPAT will return to the third-party provider's EMS a Setpoint (request) equal to zero.
- 5. Supplier Recovery Error = Actual Generation, in MW, minus Setpoint, in MW, measured over the Disturbance Recovery Time Period. The Supplier Recovery Error must reach zero or positive MW prior to and continuing through the end of the Disturbance Recovery Period (NERC defined term). The Supplier Recovery Error, in MW, will be recorded accurate to 1/10 MW. If the performance does not reach 100% plant compliance factor, then it will be counted as a failure to perform.

For $0 < t < 15$ min.

Plant Compliance Factor (i) = $[\text{MW loss} - \max(0, \text{or precontingency Supplier Control Error (i)} - \text{maximum Supplier Control Error (i)}) / \text{MW loss}] * 100\%$

Where (i) represents each resource beginning with the first resource continuing through n resources.

Where (n) is the total number of resources the self-provider is using.

- 6. For circumstances where system resources are used, the ACE and Net Interchange Deviation will be used as the Supplier Control Error.
- 7. BPAT real time schedulers will notify each self-supplying Transmission Customer of the MWh of reserve energy it delivered for each hour of contingencies. This notification will occur shortly after the conclusion of the hour of the contingency. BPAT will coordinate the energy settlement for reserve energy deliveries among the appropriate parties.

I. Definition of Terms used in this Business Practice

- 1. **Allocation Ratio:** The portion of BPAT Control Area Operating Reserve requirement obligation assigned or allocated to a party that is providing resources to meet its Operating Reserve requirements, rather than purchasing its Operating Reserve requirements from BPAT.
- 2. **Basepoint:** The scheduled hourly energy generation from a plant. It is normally held constant during the hour except during the ramp period from ten minutes before the hour to ten minutes after the hour, when plant-operating schedules for the next hour are implemented. Plants used for provision of Ancillary or Control Area Services will receive more frequent adjustment to their Basepoints, in response to BPAT control signals.

3. **Operating Reserves** (also called Contingency Reserves): The combination of Operating Reserve-Spinning Reserve Service and Operating Reserve-Supplemental Reserve Service.
4. **Energy Management System:** A control system (often computerized) designed to regulate the balance of generation and load in a control area by controlling the operation of generation, transmission, loads consistent with scheduled system frequency and voltages.
5. **Instantaneous Generation:** A generators power output level at the current instant of time. Output values are typically read every four seconds
6. **Operating Status:** An electronic indicator or flag, designating whether the reserves provider's facility is in service, responsive to automated requests for reserve delivery.
7. **Participation Factor:** The per unit (= % /100) amount of the resource provider's delivery designated by plant. For example, when the control area calls upon a reserves provider to deliver 10MW, the provider may designate participation factors of 0.3; 0.2; and 0.5 (sum=1) for its units A, B, and C respectively. The response to the control area request would then be, by unit: A=3MW; B=2MW; C=5MW.
8. **Reserve Deployment:** The sending of generation request signals to resources providing contingency Operating Reserves.
9. **Setpoint:** A request to a generating resource for operation at a particular power level; or a control signal sent to a generating resource requesting a setting of the generator Basepoint at a particular megawatt level.
10. **Scheduling Hour:** Settlement covers reserve energy delivery for the remainder of the current hour; and including the next hour if the event occurs after 30 minutes into the current hour.

Appendix A

Example:

A Transmission Customer (Utility A) serving load in the BPAT Control Area, is currently holding a Network Integration (NT) transmission contract to serve its load. It is purchasing 10 MW (flat schedule) of generation from outside the BPAT Control Area to serve its load. It is taking requirements service from the Bonneville Power Administration Power Business Line to meet the balance of its load.

Under the new tariff (2002 rate) the Transmission Customer is responsible for purchasing Operating Reserve-Spinning and Supplemental Services; or providing Operating Reserves from other resources. The Transmission Customer will see a charge of 8.27 mills per kWh of Operating Reserve requirement. Operating Reserve requirement is 7% of non-hydro resource deliveries or 5% of hydro deliveries. At least half of the Operating Reserve requirement must be Spinning Reserve. There is no Operating Reserve requirement and no reserve charge for schedules from generation outside the BPAT Control Area.

If Utility A has a monthly use of 36,000,000 kWh (average 50 MW load, 30 day month) the reserve charge the Transmission Customer will pay is based on the following formula:

$$[(50 \text{ MW} - 10 \text{ MW import}) / 50 \text{ MW}] \times 36,000,000 \times 0.052 < \text{ave. percent Reserve requirement of BPA power} > \times 0.00827 = \$12,385.15$$

Note: The average percent Operating Reserve requirement for federal resources is estimated at 5.2% based on the 2002 Final Power Rate Proposal Wholesale Power Rate Development Study, section 4.1.2

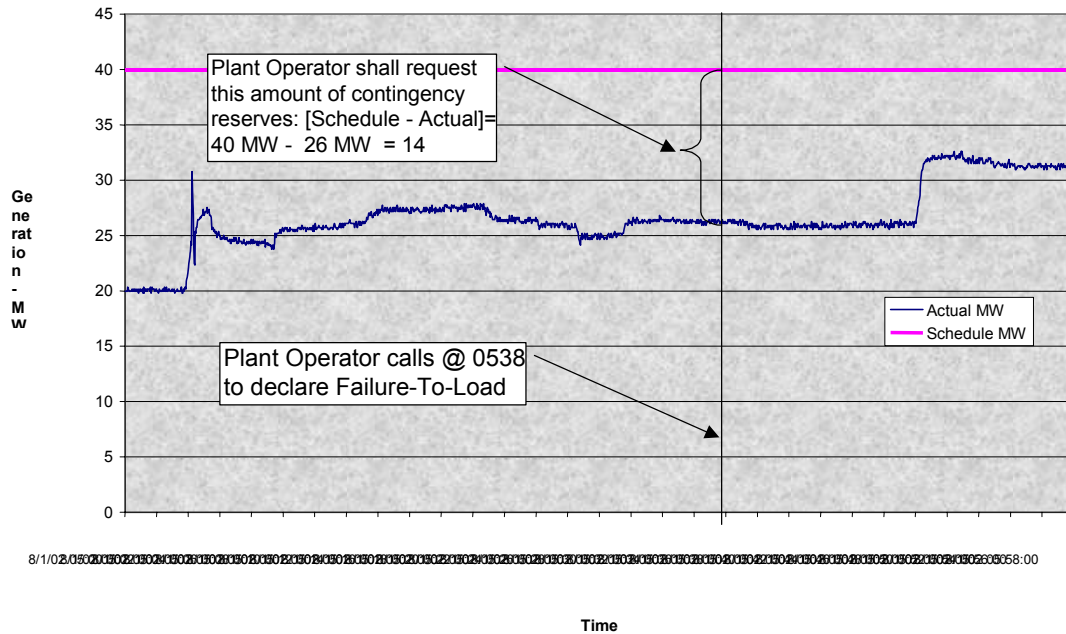
If the 10 MW purchase were from a resource inside the BPAT Control Area, and that resource experienced contingency outages, the Transmission Customer would have to pay for contingency energy delivered. Assume that the resource suffered contingencies, where it was forced out of service three times, for a total of 120 minutes. The Transmission Customer would have to pay for the energy delivered at the market index price at the time of occurrence (assume \$50/MWh). The Transmission Customer would be billed based on the following formula

$$10 \text{ MW} \times 2 \text{ hours} \times \$50/\text{MWh} = \$1,000 \text{ for reserve energy delivered.}$$

Note: It is the Transmission Customer's responsibility to seek settlement with the supply generator for energy delivered by the BPAT Control Area. When generation serving the Transmission Customer experiences a contingency which reduces its energy delivery to the Transmission Customer, the Transmission Customer will incur an obligation to BPAT to settle for the energy delivered by BPAT as Operating Reserve energy, in accordance with this business practice.

Appendix B – Determination of MW Loss

MW Loss Determination for Failure-



MW Loss Determination for Sudden Loss of Generation

